E.2.5 OAK RIDGE RESERVATION

The Oak Ridge Reservation consists of three operating industrial complexes in and around the City of Oak Ridge. The Energy Systems Waste Management Organization provides the waste management oversight for ORR. It also provides guidance to each of the operating facility waste management divisions that are responsible for operating and managing their respective waste management facilities and activities.

Y–12 Plant

Laboratory, maintenance, construction, demolition, and cleanup activities; machining operations; and waste produced in the purification of uranium for recycle are the primary waste generation activities at the Y–12 Plant (Y–12). In addition, metal-plating operations generate plating waste solutions, while various laboratory activities generate reactive wastes and waste laboratory chemicals. Liquid process waste and the sludge resulting from their treatment are generated throughout the plant. Waste oils and solvents are generated from machining and cleaning operations. Daily operations, such as janitorial services and floor sweepings, generate both noncontaminated and uranium-contaminated industrial trash.

Pollution Prevention. The Y–12 Pollution Prevention Awareness Program Plan describes the overall program in detail. The program is designed to maintain the flow of information pertaining to waste minimization and pollution prevention and to facilitate activities to implement real reductions in waste generation. A summary description of the four key elements of the Waste Minimization and Pollution Prevention Program includes a promotional campaign, information exchange, a waste tracking system, and waste assessment performance.

One goal of the program is to sustain an effective pollution prevention effort by improving the employee awareness of waste minimization opportunities and activities. Improved awareness is accomplished through including training, posters, publications, seminars, promotional campaigns, and recognition of individuals and teams for activities that reduce waste generation. Waste minimization activities at other ORR sites and other weapons sites provide useful input to the program. Using ideas developed by others is an important aspect that can save time and resources.

Tracking waste generation in a manner that lends itself to waste minimization reporting is a prerequisite to documenting successes or failures in waste minimization efforts. Y–12 is improving its ability to record and track waste shipments. Process waste assessments are being conducted as part of the ongoing program to identify, screen, and analyze options to reduce the generation of waste. This determines the amount of material in a workplace that is disposed of as waste during work operations. The assessment provides a summary of hazardous materials usage and waste production, and it identifies those processes and operations that need to be improved or replaced to promote waste minimization.

Spent Nuclear Fuel. Y–12 does not generate any spent nuclear fuel; however, it does store and safeguard a small amount of reactor-irradiated nuclear material in Building 9720-5, a large warehouse facility containing numerous vaults for storage. Some features of the facility are classified and it is distinguished by its high level of security. Operations consist of transfers, storage, and inventory of highly enriched uranium (HEU) in containers of various types.

High-Level Radioactive Waste. Y–12 does not generate or manage HLW.

Transuranic Waste. Y–12 does not generate or manage TRU waste.

Low-Level Waste. Machining operations that use stock materials including steel, stainless steel, aluminum, depleted uranium, and other materials produce machine turnings and fines as waste products. Waste treatment provides controlled conversion of these waste streams to an environmentally acceptable, or more efficiently handled or stored, form. This activity includes continuing operation and maintenance of facilities that treat

wastewaters and solid waste generated from production and production support activities. Waste minimization and planned treatment facilities are expected to reduce the magnitude of these wastes. In 1994, Y–12 treated approximately 899,000 l (237,000 gal) of liquid LLW and 2,730 m^3 (3,580 yd^3) of solid LLW (OR LMES 1996a:5-6). Table E.2.5–1 summarizes the LLW treatment facilities at Y–12. The major facilities are described below.

The Uranium Chip Oxidation Facility thermally oxidizes depleted and natural uranium (less than 1-percent enrichment) machine chips under controlled conditions to a stable uranium oxide. Upon arrival, chips are weighed, placed into an oxidation chamber, and ignited. The oxide is transferred to drums and transported to the uranium oxide storage vaults. Since the facility is not designed to treat uranium sawfines, these are currently blended with uranium oxide and placed in the oxide vaults as a short-term treatment method.

The Waste Feed Preparation Facility processes and prepares solid LLW for volume reduction through incineration by an outside contractor or storage at Y–12. The facility utilizes a 200 t capacity baler to reduce the waste volume to one-eighth of its original size. Waste comes to the facility from areas known to generate contaminated material, or from dumpsters that were analyzed at the trash monitoring station and deemed to be above the radioactive acceptability limits for the sanitary landfill. The compacted bales are placed in DOT-approved metal boxes and staged in an adjacent warehouse prior to offsite shipment for incineration or storage at Y–12.

The Uranium Treatment Unit is near Building 9206 and was used to treat uranium-contaminated nitrate waste solutions that were generated in enriched uranium recovery operations in Buildings 9212 and 9206. The RCRA closure plan for this unit was issued in March 1995 and is awaiting approval from the State.

The Waste Coolant Processing Facility is a biodegradation and storage facility for waste coolants that may be LLW. It uses the following equipment for coolant treatment:

- Three storage tanks
- Feed tank
- Waste processing reactor/clarifier
- Sludge holding tank
- Two sludge blenders/dryers
- Effluent holding tank
- Transfer pumps

Microorganisms biodegrade approximately 114,000 l (30,000 gal) of waste coolant per month into harmless products. Each batch of coolant takes approximately 30 days to treat. After treatment, the clarifier separates the wastes into three process streams: floating oily solids, liquid effluent, and settled biological solids. Floating solids are dewatered in the dryer/ribbon blender and are transferred to drums. Liquid effluent is sent to the Central Pollution Control Facility or West End Treatment Facility/West Tank Farm for final treatment prior to NPDES discharge. Biological solids are further treated in the aeration tank and then recycled or sent through the blender for dewatering. Nonrecycled solids are currently pumped into tankers for storage. This practice will continue until adequate treatment and disposal methods are established.

Long-term storage options include warehouses, tanks, and vaults, as well as storage of Y–12 wastes in buildings at K–25. The major Y–12 LLW storage facilities, described below, are summarized in Table E.2.5–2. As of June

1995, approximately 2,320 m^3 (3,040 yd^3) of LLW and 4,740 m^3 (6,200 yd^3) of uranium-contaminated scrap metal were stored at Y–12 (OR LMES 1996a:5-12).

The Classified Waste Storage Facility will provide for the permitted storage of solid LLW and mixed LLW, which is classified for national security purposes under provisions of the AEA. These wastes are currently being stored by the waste generators. The facility, located in Building 9720-25, will meet plant security requirements for classified waste management and guidelines for the management of LLW and mixed LLW.

The Containerized Waste Storage Area near Buildings 9206 and 9212 provide storage for cans of ash resulting from the combustion of uranium-contaminated solid wastes. Combustible solid wastes contaminated with enriched uranium are ashed during the uranium recovery process. The cans of ash are stored until uranium accountability results have been obtained and the material can be returned to the uranium recovery process for further processing to recover the enriched uranium.

The Depleted Uranium Oxide Storage Vaults I and II are on Chestnut Ridge, northeast of Building 9213. The vaults are constructed of reinforced concrete and provide a retrievable storage repository for uranium oxide, uranium metal, and a blended mixture of uranium sawfines and oxide. The vaults contain a negative-pressure exhaust system that operates during material entry. The exhaust is filtered and monitored prior to its release to the atmosphere. The facility uses forklift trucks, electric hoists, and a motorized drum dumper during operation. Depleted uranium oxide and blended sawfines are delivered in sealed 113- and 208-l (30- and 55-gal) drums, with a weight limit of 386 kg (850 lb).

The Old Salvage Yard contains both low-level uranium-contaminated and nonradioactive scrap metal. Most scrap currently sent to this facility is contaminated. The Contaminated Scrap Metal Storage Area of the Old Salvage Yard is used to store uranium-contaminated scrap metal. Contaminated scrap is placed in approved containers and eventually will be transferred to above-ground storage pads. Noncontaminated scrap is sold when offsite shipments are allowed. This facility is at the west end of Y–12.

Y–12 has no current onsite LLW disposal capability. All disposal activities at the Bear Creek Burial Ground were terminated on June 30, 1991. This landfill was used to dispose of radiologically contaminated solid waste. These wastes are currently containerized and stored at Y–12 in above-grade storage pads or are shipped offsite for incineration. In 1994, approximately 1,710 m^3 (2,240 yd^3) of solid nonmetallic LLW were sent offsite to be compacted or incinerated and the ash returned to Y–12 for storage (OR LMES 1996a:5-8). Also, 1,630 m^3 (2,140 yd^3) of contaminated scrap were sent offsite to be smelted. The proposed LLW disposal facilities project would provide new disposal facilities at a centralized ORR location. The proposed LLW disposal facilities would use state-of-the-art disposal technologies, including lined trenches with leachate collection treatment capabilities and tumulus confinement disposal units. The Class-II facility, for wastes contaminated with very low concentrations of short (less than 30 years) half-life radionuclides, is expected to be operational in 2002. DOE has indefinitely postponed construction of the Class-I facility, for wastes contaminated with very low concentrations of predominantly long (greater than 30 years) half-life radionuclides.

Mixed Low-Level Waste. Mixed LLW is generated from the development, metal preparation, fabrication, and assembly/industrial engineering functions at Y–12. Mixed LLW is hazardous waste such as solvents, degreasers, biodegradable coolants, organic and inorganic acids, biodenitrification sludge, and wastewater that is contaminated with enriched and/or depleted uranium. There is no disposal of mixed waste at Y–12; however, future plans include disposal of mixed waste at a permitted offsite commercial facility. Mixed wastes are put in storage awaiting treatment or disposal, treated at Y–12, or sent to another ORR facility for treatment or disposal. Table E.2.5–3 presents the inventory of mixed LLW at Y–12 as of December 1994, along with a 5-year projection. In 1994, approximately 766,000 l (202,000 gal) of liquid mixed LLW was treated at Y–12 (OR LMES 1996a:7-6). The Y–12 Waste Management Division operates several mixed LLW treatment facilities, which are described below and are summarized in Table E.2.5–1.

The Groundwater Treatment Facility treats wastewater from the liquid storage facility at Y–12 and seepwater collected at K–25 to remove volatile and nonvolatile organic compounds and iron. The facility is part of the disposal area remedial action program to collect and treat contaminated groundwater from the Bear Creek Burial Grounds. The facility, located at the far west end of Y–12 adjacent to the West End Treatment Facility, utilizes an air stripping operation to remove volatile organics. In addition, carbon adsorption eliminates nonvolatile organics and PCBs. Iron removal equipment is also operational. After treatment, wastewater is sampled and recycled if additional processing is required. Wastewater that meets discharge specifications is pumped into East Fork Poplar Creek through an NPDES monitoring station. The Groundwater Treatment Facility treated and discharged approximately 1,206,000 l (319,000 gal) during 1992 (DOE 1994k).

The West End Treatment Facility/West Tank Farm treats the following nitrate-bearing wastes generated by Y–12 production operations: nitric acid wastes, nitrate-bearing rinsewaters, mixed acid wastes, waste coolants, mop water, caustic wastes, and biodenitrification sludges. Treatment operations consist of biological denitrification, biological oxidation, metals precipitation, coagulation, flocculation, clarification, filtration, pH adjustment, degassification, and carbon adsorption. Wastes are received at the West End Treatment Facility/West Tank Farm in 18,900-l (5,000-gal) tankers, 2,270-l (600-gal) polytanks, and in smaller, approved waste transportation containers such as drums, bottles, and carboys. Detailed waste analysis documentation is used to determine the treatment scheme and temporary storage location of each shipment. The West End Treatment Facility effluent polishing system facilitates the removal of uranium, trace metals, and suspended solids. The treated wastewater is then discharged to East Fork Poplar Creek through an NPDES monitoring station. Sludges, spent carbon and spent filter material generated during the treatment processes are currently stored in 1,890,000-l (500,000-gal) tanks. A major modification to the West End Treatment Facility/West Tank Farm is currently in the design phase. This modification will remove all heavy metals up front, thus separating the hazardous sludge from the nonhazardous sludge. Approximately two-thirds of the current sludge volume generated can then be disposed of as nonhazardous waste.

The Y–12 Cyanide Treatment Unit provides storage and treatment of waste solutions containing metallic cyanide compounds from spent plating baths and precious metal recovery operations or other areas. The cyanide reduction process is currently performed in 208-l (55-gal) containers. After waste is treated at the Cyanide Treatment Unit, it is transferred to the West End Treatment Facility, where it is further treated then discharged to the East Fork Poplar Creek.

As of June 1995, approximately 15,000 m^3 (19,600 yd^3) of mixed LLW were projected to be stored at Y–12 (OR LMES 1996a:7-21). Table E.2.5–2 summarizes the mixed LLW storage facilities at Y–12 that are described below.

The Containerized Waste Storage Area consists of three concrete pads covering approximately 2,320 m^2 (24,800 square feet [ft^2]). These pads provide storage for LLW, RCRA hazardous, and mixed LLW. An impermeable dike surrounding each pad provides 0.3 m (1 foot) of spill containment. Fire protection at this facility will be upgraded, contingent on funding.

The Building 9811-1 RCRA Storage Facility (OD7 and OD8) contains a diked tank storage area (OD7) and an enclosed containers storage area (OD8) with a capacity of 1,000 drums. OD7 contains four 114,000-l (30,000-gal) tanks, two 37,900-l (10,000-gal) tanks, and associated piping and pumps. At OD8, RCRA waste oil/solvent mixtures containing various concentrations of chlorinated and nonchlorinated hydrocarbon solvents, uranium, trace PCBs, and water for specific chemical constituents are stored in 208-l (55-gal) drums and 1,140-l (300-gal) Tuff-tanks to await sampling and analytical results. Wastes deemed compatible with OD7 materials are pumped into the OD8 Tuff-tanks. Noncompatible wastes are transported to other facilities.

The Waste Oil/Solvent Storage Facility (OD9), a permitted RCRA/TSCA hazardous waste storage facility, consists of a diked area supporting five 151,000-l (40,000-gal) tanks, a tanker transfer station with five centrifugal transfer pumps, and a drum storage area. Three tanks house PCB wastes contaminated with uranium,

one tank contains nonradioactive PCB wastes, and one tank holds RCRA hazardous wastes. A diked and covered pad furnishes space for 33 m^3 (43 yd^3) of containerized wastes. Wastes assigned to this facility are first stored at OD8 (Building 9811-1 RCRA storage facility) to await laboratory results. The diked area has additional space for a sixth 151,000-l (40,000-gal) tank. This facility is projected to be used until 2010, due to the anticipated lack of disposal outlets for uranium-contaminated organic liquids.

The Liquid Organic Waste Solvent Storage Facility (OD10) contains four 24,600-l (6,500-gal) and two 11,400-l (3,000-gal) stainless steel tanks for storage of ignitable nonreactive liquids, including those contaminated with PCBs and uranium. In addition, a diked and covered storage area provides space for 40,000 l (10,600 gal) of containerized waste. The facility is capable of segregating various spent solvents for collection and storage. Major solvent waste streams are transferred to tanks until final disposition.

The Building 9720-9 Storage Area has a drum storage area for mixed and PCB wastes, including an area designed to contain flammable wastes. The western half of the facility, with space for approximately 1,500 drums, stores both PCB and RCRA hazardous waste. The facility's eastern half is not currently in use. Upgrades are under way on ventilation, diking, and fire-suppression systems to comply with RCRA, TSCA, and DOE standards and to allow for mixed and PCB waste storage.

The RCRA Staging and Storage Facility (Building 9720-31) prepares solid, liquid, and sludge wastes for offsite shipment. The facility consists of seven storage rooms and seven staging rooms, each with a separate ventilation system. The staging rooms house small containers that are packed with compatible materials and shipped. The storage rooms hold larger containers, such as 208-l (55-gal) drums. Each room, which can hold up to 90 drums, accommodates a different class of hazardous waste.

The RCRA and PCB Container Storage Area (Building 9720-58) is a warehouse facility used for staging prior to treatment or disposal of PCB-contaminated equipment (transformers, capacitors, and electrical switchgear) and nonreactive, nonignitable RCRA waste contaminated with uranium. Waste containers received at Building 9720-58 include 114- and 208-l (30- and 55-gal) drums, 1,250- and 2,500-l (330- and 660-gal) portable tanks, B-25 boxes, and self-contained PCB equipment.

The Solid Storage Facility provides 1,630 m^2 (17,500 ft^2) of storage space for PCB- and uranium-contaminated soil. The facility also has a synthetic liner for leachate collection and a leak detection system. Collected leachate is transferred to the liquid storage facility for pretreatment. The solid storage facility is currently undergoing the RCRA Part B permitting process. No additional wastes are being added to the facility.

Hazardous Waste. Plating rinsewaters; waste oil and solvents from machining and cleaning operations; contaminated soil, soil solutions, and soil materials from RCRA closure activities; and waste contaminated with hazardous constituents from construction/demolition activities are the major sources of hazardous waste at Y–12. In 1994, approximately 15,500,000 l (4,090,000 gal) of hazardous liquid were treated (OR LMES 1996a:6-3). [Text deleted.] In 1994, approximately 190 m^3 (250 yd^3) of PCB hazardous material was shipped offsite for treatment (DOE 1995h). The Y–12 Waste Management Division operates several hazardous treatment facilities that are described below and are summarized in Table E.2.5–4.

The Plating Rinsewater Treatment Facility treats dilute plating rinsewaters contaminated primarily with chromium, copper, nickel, and zinc. It can also treat cyanide-bearing wastes and remove chlorinated hydrocarbons. The design capacity for this facility is 30.3 million l/yr (8 million gal/yr). Under normal conditions, the facility treats 852,000 l (225,000 gal) of plating rinsewater per year (DOE 1995gg). The facility is across the street from the Building 9401-2 Plating Shop, which produces most of Y–12's rinsewaters. The facility neutralization, equalization, and cyanide destruction equipment is located outdoors in a diked basin. The remainder of the process is located in Building 9623. Rinsewaters are received via a direct pipeline from the plating shop, but they can also be received in tankers, polytanks, or in any acceptable waste shipping container. The Plating Rinsewater Treatment Facility performs the following treatment operations: potential of

hydrogen (pH) adjustment, flow equalization, heavy metal removal by electrochemical precipitation, flocculation, and clarification. After the clarification operation, the rinsewater is transferred to the Central Pollution Control Facility. That facility provides the carbon adsorption operation, final filtration, and discharge to East Fork Poplar Creek through an NPDES monitoring station. Treated rinsewater is sometimes recycled for use as makeup water for Central Pollution Control Facility processes. Sludge from the clarification process is transferred to the Central Pollution Control Facility, then taken to the West Tank Farm for interim storage.

The Steam Plant Wastewater Treatment facility treats approximately 233 million l/yr (61.5 million gal/yr) of wastewater from steam plant operations, demineralizers, and coal pile runoff (OR LMES 1996a:8-4). Treatment processes include wastewater collection/sedimentation, neutralization, clarification, pH adjustment, and dewatering. The facility, which is managed by the Y–12 utilities department, uses automated processes for continuous operation. All solids generated during treatment are nonhazardous and are disposed of in the sanitary landfill. The treated effluent is monitored prior to NPDES discharge to the East Fork Poplar Creek.

Hazardous waste is being stored until the management and operations contractor and DOE approve shipment for offsite disposal under the DOE "No Rad Added" performance objective. As of June 1995, approximately 34 m^3 (44 yd^3) of hazardous waste was stored at Y–12 (OR LMES 1996a:6-6). Table E.2.5–5 summarizes some of the major existing Y–12 hazardous waste storage facilities described below.

The Oil Landfarm Soils Storage Facility contains approximately 420 m^3 (550 yd^3) of soil contaminated with PCBs and volatile organics (OR DOE 1993a:9-21). The soil was excavated from the oil landfarm and tributary 7 in 1989. The soil is contained in a covered, double-lined concrete dike with a leak-detection system. The leak-detection system will soon be modified to enhance detection capabilities.

The Liquid Storage Facility of the Disposal Area Remedial Actions Liquid Storage Treatment Unit is a hazardous waste storage facility built during the Bear Creek Burial Ground closure activities. It is located in Bear Creek Valley approximately 3.2 kilometers (2 miles) west of Y–12. It collects and stores groundwater and other wastewaters received from the seep collection lift station, the solid storage facility, tankers, polytanks, and the diked area rainfall accumulation. Feed streams may contain oil contaminated with PCBs, volatile and nonvolatile organic compounds, and heavy metals. Processing and storage equipment include:

- Two 284,000-l (75,000-gal) bulk storage tanks
- 22,700-l (6,000-gal) oil storage tank
- Gravity separator
- Filtering unit
- Composite sampling station
- Tanker transfer station

The wastewater travels through the gravity separator, cartridge filters, and composite sampling station prior to storage in the bulk tanks. A reinforced concrete dike surrounds all equipment to provide spill containment. After sufficient wastewater accumulates in the bulk storage tanks, it is processed at the groundwater treatment facility. A new leachate collection system collects and pumps hazardous waste seepage from the burial ground to the Liquid Storage Facility.

The Y–12 Waste Management Division operates Industrial Landfill V, which is used for disposal of industrial and institutional solid waste and special waste, such as asbestos materials, empty aerosol cans, materials contaminated with glass, fly ash, coal pile runoff sludge, empty pesticide containers, and steam plant wastewater

treatment facility sludge. The landfill area is on Chestnut Ridge, near the eastern end of the plant, and serves Y–12, Oak Ridge National Laboratory (ORNL), K–25, and other DOE prime contractors at Oak Ridge. The landfill utilizes shallow land burial by the area fill method and is permitted by the State of Tennessee. Requests are filed with the state to provide disposal for additional materials as needed.

The Chestnut Ridge borrow area waste pile (Industrial Waste Landfill III) consists of mercury-contaminated soil removed from the Oak Ridge Civic Center area and deposited at Y–12 Chestnut Ridge. No other waste has been disposed of at this site.

Nonhazardous Waste. Major waste-generating activities include construction and demolition activities that produce large volumes of noncontaminated wastes, including lumber, concrete, metal objects, soil, and roofing materials. Industrial trash is generated by daily operations throughout the plant. These operations include janitorial services, floor sweepings in production areas, and production activities. In 1994, the Y–12 Plant generated 228 million l (60.3 million gal) of industrial and sanitary liquid waste that included oils and solvents, operational wastewater, Central Pollution Control Facility/Plating Rinsewater Treatment Facility wastewater, steam plant wastewater, environmental restoration waste, and liquid waste received from ORNL and K–25 (OR LMES 1996a:8-3). The waste storage facility in Building 9720-25 has a solid waste baler with an 8:1 compaction ratio (DOE 1994n). Approximately 41,700 m^3 (54,700 yd^3) of solid nonhazardous waste was compacted and/or stored during 1994 (OR LMES 1996a:8-3).

The Sludge Handling Facility (T-118) was designed and constructed to provide water filtration and sludge dewatering in support of a storm sewer cleaning and relining project. Filtered water was reused by the sewer-cleaning contractor, and the dewatered sludge was stored in specially constructed containers for future disposal. The facility is currently being used to store containers of LLW.

The Steam Plant Ash Disposal Facility is used to collect, dewater, and dispose of sluiced bottom ash generated during operation of the coal-fired steam plant. An additional trench was constructed for the disposal of sanitary and industrial wastes generated by ORNL, K–25, and Y–12. In order to comply with environmental regulations for landfill operations, the Steam Plant Ash Disposal Facility includes a leachate collection system, a transfer system to discharge the collected leachate into the Oak Ridge public sewage system, groundwater monitoring wells, and a gas migration/ventilation system.

In 1992, approximately 677 m^3 (887 yd^3) of clean scrap metal was stored at Y–12 (OR DOE 1993b:9-6). The New Salvage Yard is used for the staging and public sale of nonradioactive, nonhazardous scrap metal. Sales have been suspended, however, until procedures to meet the DOE "No Rad Added" performance objective have been approved. The New Salvage Yard provides accumulation and sorting activities for nonradiologically contaminated scrap metal. Plans are in place to provide an automotive lead cell battery repository for used batteries until recycling options are initiated. This facility is located near the Bear Creek Burial Ground.

The new Industrial Landfill V and Construction Demolition Landfill VI permit disposal of 93,500 m^3/year (yr) (122,000 yd^3/yr) of industrial and sanitary waste (OR LMES 1996a:8-7). The facilities were designed and are operated in accordance with Tennessee solid waste disposal regulations. A baler, located in Building 9720-25, is used to compact sanitary/industrial waste destined for Industrial Landfill V.

Oak Ridge National Laboratory

Because ORNL is a research facility, it has many diverse waste-generating activities, each of which may produce only a small quantity of waste. Isotope production, utilities, and support functions such as photography are additional sources of waste. The radioactive wastes produced by each activity reflect the nature of its operation. A large number of radioisotopes are handled in isotope production and packaging, in reactor and accelerator operations, in reprocessing studies on nuclear fuel, and in investigations into the interactions of

radioactivity with living systems. The radioactive wastes generated by these activities can be classified as follows:

- Concentrates generated by the treatment of intermediate-level wastes, which are disposed of by hydrofracture.
- LLW contaminated with beta/gamma-emitting radioactivity. These wastes, which have a low surface dose rate, are compacted if possible and disposed of in earthen trenches; those wastes which exhibit a high surface dose rate are disposed of in augered holes.
- TRU wastes, which are retrievably stored.
- Low-level alpha-emitting wastes, which are evaluated for criticality hazards before disposal in augered holes.

Pollution Prevention. Waste segregation is used to minimize the generation of solid LLW. By providing collection barrels for both radioactive and nonradioactive wastes, the volume of wastes that requires handling as radioactive waste has been reduced. Before these procedures were implemented, radioactive and nonradioactive wastes were discarded in the same barrel. This contaminated the nonradioactive portion and inflated the amount of waste that required special disposal.

Spent Nuclear Fuel. ORNL generates small quantities of spent nuclear fuel. Several facilities are used to house spent nuclear fuel (DOE 1993r:28-29):

- The Irradiated Fuels Examination Laboratory (Building 3525) only contains hot cells. Disassembly and examination of irradiated fuel and components continue to be the mission of the facility.
- The High Level Radiochemical Laboratory (Building 4501) contains centrally located hot cells supported by various laboratories capable of handling radioactive material. It has been used in performing work on fission gas release in light water reactor fuel rods. The spent nuclear fuel is in dry storage.
- The Radiochemical Engineering Development Center (Building 7920) is a multipurpose hot cell facility with the appropriate equipment, shielding, and containment provisions to safely process and store large quantities of highly radioactive fuel elements. It was specifically built to prepare and process targets for the High Flux Isotope Reactor.
- The Bulk Shielding Reactor, a pool-type research reactor, is currently shut down and its core is stored in racks. Fuel assemblies from the Oak Ridge research reactor are also stored in the pool.
- The High Flux Isotope Reactor is an 85-megawatt (MW), beryllium-reflected, light-water-moderated, flux-trap-type research reactor with associated support equipment and a storage pool. Missions include production of isotopes for medical and industrial applications, neutron-scattering experiments, and various material irradiation experiments. This is the only reactor that is still generating fuel elements that will need storage in the future.
- The Molten Salt Reactor Experiment is an 8-MW, homogeneous reactor consisting of uranium fluoride fuel in molten lithium salt. Its purpose was to test the practicality of a molten-salt reactor concept for central power station applications. The fuel is being stored in the salt storage tanks beneath the reactor.

- The Tower Shielding Reactor is a reactor facility where experiments were conducted outdoors on a remote hilltop. It is a spherically symmetric 1-MW plate-type reactor. The purpose of the facility was to conduct large-scale experiments to test shielding design methods and obtain associated data. The original core is located in the reactor. Four fuel plates are stored in the underground site, and 1,200 low-enriched fuel pins are stored in DOT shipping containers.

- Wells 7823A/7827/7829 are stainless-steel dry wells placed in the ground to provide shielded, retrievable storage facilities. They are currently closed to further storage. The wells were used to store irradiated fuel and associated fission products from 1972 to 1989.

- Waste Area Grouping 7 (Homogeneous Reactor Experiment wells) consists of seven augered holes that were drilled in 1964 to store 511 l (135 gal) of a 40-molar fuel solution. Each well was filled to ground level with soil and marked by a concrete plug and brass plaque.

- The Classified Burial Ground is now closed to operations but in the past, fuel materials were buried there. The exact quantity and location of all this material is not known.

- Solid Waste Storage Area 6 houses the suspension test reactor fuel. Seven of the underground dry-storage units are empty, although one unit has been found to contain water and another contains moist sand. These units are, therefore, not available for additional storage.

- The Building 9720-5 Vault houses the fissile components of the health physics research reactor, a DOE demonstration reactor, and the Space Nuclear Auxiliary Power-10A reactor. The building also stores HEU, which would require significant coordination with safeguards and security as well as transportation personnel.

A summary table of the inventory of reactor-irradiated nuclear material is shown in Table E.2.5–6.

High-Level Radioactive Waste. ORNL does not generate or manage HLW.

Transuranic Waste. Table E.2.5–7 presents the inventory of TRU and mixed TRU wastes at ORNL as of December 31, 1994, along with a 5-year projection. As of December, 1994, approximately 654 m^3 (857 yd^3) of contact-handled TRU waste were stored at ORNL. The amount of remote-handled TRU waste was approximately 59 m^3 (78 yd^3) (DOE 1995gg). Approximately 748 m^3 (973 yd^3) and 1,656 m^3 (2,153 yd^3) is contact and remote-handled mixed TRU, respectively. The bulk of ORNL's mixed TRU waste is in three liquid/sludge waste streams that are currently stored in tanks. Each tank's wastes must be remotely handled because of the high radioactivity. ORNL's underground storage tank management program includes implementation of leak detection, corrosion protection, spill and overflow protection, annual tightness testing, operational controls, record keeping, reporting, and replacement of those systems that cannot be upgraded by 1998. The program also addresses the immediate removal from service and remediation of sites with tanks found to be leaking, and it implements any required closures, corrective actions, and any upgrading and/or replacement of affected tanks in accordance with the regulatory requirements. Status of the tanks managed under the *Underground Storage Tank Program* is as follows:

- Twenty-six tanks have been excavated or permanently taken out of service (20 have been approved by Tennessee as closed; 6 require additional investigation and/or corrective action before final closure approval).

- Twenty-four tanks are deferred from 40 CFR 280. These will be taken out of service or upgraded.

- Two tanks were upgraded in 1990 to meet the current leak-detection requirements.

- Two tanks contain heating oil and are excluded from regulation under 40 CFR 280.

- Five tanks contain waste oil contaminated with radionuclides and are excluded under 40 CFR 280.

Solid TRU waste consisting of filters, paper, metals, and other items is generated at ORNL through laboratory, pilot plant, and reactor operations. This includes both contact-handled and remote-handled waste contaminated with lead and, in some cases, mercury. Since there is no TRU waste treatment facility at ORNL, generated TRU waste is being placed in retrievable storage. Contact-handled TRU waste is predominantly packaged in drums, while remote-handled waste is packaged in concrete casks. In 1994, approximately 105 m^3 (138 yd^3) of contact-handled and 63 m^3 (83 yd^3) of remote-handled TRU waste were placed in storage (OR LMES 1996a:4-4a). Current activities center around certification of contact-handled waste, planning and designing of a repackaging and certification facility for remote-handled wastes, and planning for shipment of wastes to WIPP or another suitable repository should WIPP prove to be unsatisfactory. The repackaging facility, located in Building 7880, is called the waste handling and packaging plant and is planned for 2001. Tables E.2.5–8 and E.2.5-9 summarize the storage and treatment facilities for TRU and mixed TRU wastes at ORNL.

The ORNL Waste Examination and Assay Facility, Building 7824, is used primarily for nondestructive examination and assay of the contents of waste containers of TRU wastes and LLW to verify compliance with the receiving (storage or disposal) facility waste acceptance criteria. The facility is also used for the nondestructive assay of nonwaste materials. It is located within the confines of SWSA-5 in the Melton Valley area of ORNL.

Low-Level Waste. Isotope production and research activities generate a variety of liquid LLW, including low-level wastewater. Sources of solid LLW include contaminated equipment, filters, paper, rags, plastic, and glass and sludge from the process waste treatment plant. Table E.2.5–9 shows the LLW treatment facilities that are operating at ORNL. In 1994, 143 m^3 (187 yd^3) of solid LLW were received prior to compaction and 189,000 l (49,800 gal) of liquid LLW were solidified at ORNL (OR LMES 1996a:5-7). Approximately 462 m^3 (605 yd^3) were sent offsite to be compacted and/or incinerated (OR LMES 1996a:5-8).

Solid LLW, including scrap metal, is placed in storage prior to disposal. As of June 1995, approximately 1,690 m^3 (2,210 yd^3) of solid LLW and 2,970 m^3 (3,890 yd^3) of radioactive scrap metal were in storage awaiting disposal at ORNL (OR LMES 1996a:5-13). Table E.2.5–10 lists the LLW and mixed LLW storage facilities currently operating at ORNL.

The SWSA-6 area at ORNL is the only active onsite disposal unit at ORR. It receives solid LLW from ORNL only, including radioactively contaminated asbestos. As of the end of 1995, approximately 340 m^3 (445 yd^3) of solid LLW were buried at SWSA-6 (OR LMES 1996a:5-16). This does not include 355 m^3 (465 yd^3) buried at three silos and a trench that was closed at the end of 1993 (OR MMES 1995c:5-29). Table E.2.5–11 lists the LLW disposal facilities at SWSA-6.

Mixed Low-Level Waste. Mixed wastes are generated by research projects and some facility operations. Isotope production and research activities generate a variety of mixed low-level and mixed TRU wastes. Table E.2.5–12 presents the inventory of mixed LLW at ORNL as of December 31, 1994, along with a 5-year projection.

As shown in Table E.2.5–9, three facilities are currently treating mixed waste at ORNL: the Process Waste Treatment Plant, the Liquid LLW Evaporation Facility, and the Melton Valley LLW Immobilization Facility (DOE 1995gg). One other treatment facility, the Nonradiological Wastewater Treatment Plant, is operating and could be used to treat mixed waste.

The Process Waste Treatment Plant is designed to treat process wastewaters, groundwater, and evaporator condensate wastewaters that contain low levels of radioactivity. Small concentrations of radioactive materials

have occasionally been processed. Process wastewaters may contain small quantities of radionuclides, metals, anions, and organic chemicals. Under normal operating conditions, the process waste treatment plant can process wastewater at a rate of 492 l/minute (min) (130 gal/min). The design capacity is 757 l/min (200 gal/min) (DOE 1993h:26.2-5). Wastewaters can contain organic materials and low levels of radioactivity. The facility can treat waste streams with some heavy metals but not streams containing PCBs.

The Liquid LLW Evaporation Facility treats liquid LLW and mixed LLW using evaporation. It operates in a semicontinuous mode; waste is accumulated in collection tanks and transferred through underground piping to an evaporator system. The design capacity is 106,000 l/day (28,000 gal/day). The facility processes an average of 1,140 l (301 gal) of liquid wastes per day under normal operating conditions (OR DOE 1993a:9-22). The facility can treat waste streams containing organic contaminants.

Table E.2.5–10 summarizes the mixed LLW storage facilities at ORNL and estimates the capacity of these facilities. As of June 30, 1995, approximately 1,600 m^3 (2,100 yd^3) of mixed waste was projected to be in storage at ORNL (OR LMES 1996a:7-21).

The only disposal of mixed waste done at ORNL is the burial of radioactive asbestos at SWSA-6. Asbestos contaminated with low levels of radioactivity is placed in silos. In 1992, approximately 23 m^3 (30 yd^3) of contaminated asbestos were buried (OR DOE 1993b:9-4). Low-level contaminated biological waste has also been buried at SWSA-6.

Hazardous Waste. Hazardous wastes are generated in laboratory research, electroplating operations, painting and maintenance operations, descaling, demineralizer regeneration, and photographic processes. Few hazardous wastes are treated in onsite facilities. Onsite treatment at ORNL includes elementary neutralization and detonation facilities. Tables E.2.5–10 and E.2.5–13 summarize the hazardous waste storage and treatment facilities at ORNL. [Text deleted.]

The Chemical Detonation Facility treats small amounts of wastes that would be dangerous to transport offsite. Explosives such as aged picric acid are detonated in the detonation facility. Certain other wastes (for example, spent photographic processing solutions) are processed onsite into a nonhazardous state. Those wastes that are safe to transport are shipped to offsite RCRA-permitted commercial treatment/disposal facilities.

The Nonradiological Wastewater Treatment Plant is designed to reduce hazardous pollutant concentrations in nonradiological wastewaters to levels acceptable for effluent discharge. The plant operates in a continuous mode and carries out physical and chemical processing steps. The facility contains a heavy-metal removal system, where the pH of the wastewater is raised to 10.5 in a clarifier. Polymers are added to induce flocculation and settling of the metal precipitates. The wastewater is passed through a filtration system to remove particulates. An air stripper then removes volatile organics and activated carbon columns remove mercury. In 1993, approximately 23,800,000 l (6,300,000 gal) of liquid hazardous wastes were treated at the Nonradiological Wastewater Treatment Plant (OR MMES 1995c:6-6).

As of June 1995, approximately 29 m^3 (38 yd^3) of hazardous waste was stored at ORNL (OR LMES 1996a:6-6). PCB wastes are managed in storage facilities until they can be shipped offsite for treatment and/or disposal. PCB-contaminated and hazardous wastes are temporarily stored at Building 7507, and PCB-contaminated wastes are stored on the 7507W storage pad. Due to the "No Rad Added" policy, hazardous wastes are being stored as mixed waste. A listing of the hazardous waste storage facilities at ORNL is shown in Table E.2.5–14. In 1992, approximately 10 m^3 (13 yd^3) of asbestos wastes were sent to Y–12 Sanitary and Industrial Landfill II. About 12 m^3 (16 yd^3) of hazardous and PCB wastes were sent to K–25 for storage and incineration in the TSCA incinerator (OR DOE 1993b:9-5).

Nonhazardous Waste. Nonhazardous wastes result from ORNL maintenance and utilities. The steam plant and the sanitary waste treatment plant produce a sludge which is sampled to demonstrate that it is nonhazardous and

meets the Y–12 Industrial and Sanitary Landfill II waste acceptance criteria. The sewage treatment facility treats sanitary and laundry wastewater. It is an extended aeration-activated sludge unit followed by mixed-media tertiary filtration of secondary effluent dewatering. The sludge is dried onsite in open-air drying beds. In 1994, approximately 360 million l (95 million gal) of industrial and sanitary liquid waste were treated at the sewage treatment plant (OR LMES 1996a:8-4).

The Melton Valley LLW Immobilization Facility is currently treating nonhazardous liquid waste (OR DOE 1994a:A-20). The facility can be used to solidify liquid mixed LLW that has a pH greater than 12.5 and that contains some heavy metals. This liquid mixed LLW is transferred from tanks by interconnecting pipelines. Batches of waste are pumped from a liquid decantation system to a solidification system as required to provide adequate storage-tank capacity. The facility operates on a campaign basis in order to provide adequate storage capacity. Solidification is currently performed using cementation. Design capacity is 62,500 l (16,500 gal) of liquid waste per month. Under normal operating conditions, the facility can process 7,570 l/month (2,000 gal/month) as required to provide adequate storage-tank capacity (DOE 1993h:26.2-5). The facility cannot treat HLW, alpha-contaminated waste with TRU activity levels greater than 100 nanocuries per gram (nCi/g), organic wastes, or PCBs.

Scrap metals are discarded from maintenance and renovation activities and are recycled when appropriate. Construction and demolition projects also produce nonhazardous industrial wastes. All solid nonhazardous wastes and medical wastes (after they are autoclaved to render them noninfectious), except scrap metal, are sent to Y–12 Industrial and Sanitary Landfill II. Approximately 16 m^3 (21 yd^3) of scrap metal were placed in storage at ORNL in 1992. This waste will remain at ORNL until it is characterized as nonradioactive per the "No Rad Added" policy (OR DOE 1993b:9-7).

Rainfall runoff from the ORNL Steam Plant coal yard storage area, plus additional wastewater from the sulfuric acid tank diked area runoff, Steam Plant boiler blowdown, and water softener regenerate, are collocated in a basin. This waste is treated at the Coal Yard Runoff Treatment Facility.

K–25 Site

Enrichment, maintenance, decontamination, and research and development activities have generated a wide variety of waste at K–25. Because of its past uranium enrichment mission, uranium is the predominant radionuclide found in K–25 waste streams. Waste management activities are increasing. Low-level radioactive wastes from other DOE sites are placed in building vaults until a final disposition strategy is identified. Also, PCB wastes and RCRA wastes contaminated with uranium began arriving from other DOE sites in 1987 for incineration in the K-1435 TSCA incinerator. Tables E.2.5–15 and E.2.5–16 summarize the treatment and storage facilities at K–25 that are capable of treating and storing multiple categories of waste.

Pollution Prevention. K–25 policy mandates minimization of waste generated while achieving compliance with applicable environmental regulations. Five waste reduction options are used at K–25: segregation, material substitution, process innovation, mechanical volume reduction, and recycling/reuse. In recent years, some aluminum cans, worker clothing, and office furniture have been recycled for use at K–25. As of 1991, this recycling had saved approximately 1,150,000 kg (2,520,00 lbs) of materials. K–25 management supports the waste reduction program. An example of this program is the conversion to gas-fired boilers to reduce capacity excursions and, in effect, reduce or eliminate fly ash production.

Spent Nuclear Fuel. K–25 does not generate or manage spent nuclear fuel.

High-Level Radioactive Waste. K–25 does not generate or manage HLW.

Transuranic Waste. K–25 does not generate or manage TRU waste.

Low-Level Waste. Solid LLW is generated by discarding radioactively contaminated construction debris, wood, paper, asbestos and trapping media. Solid LLW is also generated by process equipment and by removing radionuclides from liquid and airborne discharges. Currently, solid LLW is being stored for future disposal. Table E.2.5–17 shows the storage facilities that deal only with LLW. [Text deleted.] Treatment of the current inventory of contaminated scrap metal at K–25 (as well as at Portsmouth, Paducah, and Fernald facilities) is expected to occur over the next 3 to 5 years as part of a comprehensive DOE scrap metal program to be managed through K–25. All contaminated scrap metal is stored aboveground at the K-770 scrap metal facility until further disposal methods are evaluated.

The Uranium Hexafluoride (UF_6) Cylinder Program is directed toward improving the safety and reliability of long-term storage for 7,000 cylinders currently at K–25. These cylinders remain from the now-terminated gaseous diffusion mission. In storage at the site are approximately 5,000 9-t (10-ton) and 13-t (14-ton) cylinders of depleted UF_6; 1,000 cylinders of normal-assay feed UF_6; 400 cylinders containing more than 23 kg (50 lb) of "enriched" material; and 600 miscellaneous empty cylinders. The UF_6 Cylinder Program is being designed to develop a clear understanding of the current conditions of the cylinders and define any near-term and long-term actions for safe storage of the cylinders pending decisions on ultimate disposition of the UF_6 material. Some of the initial actions in the program are a baseline inspection, a corrosion coupon program, and an ultrasonic thickness measurement program. The baseline inspection identified a variety of cylinder defects that will require special attention and also identified four breached cylinders. Immediate corrective actions have been taken to handle the breached cylinders, and a schedule of activities has been developed for moving and repairing the cylinders.

The cylinders containing normal-assay feed UF_6 are currently being shipped to the Paducah Gaseous Diffusion Plant. The current DOE direction for the 5,000 cylinders with depleted UF_6 is to store them until at least the year 2020, at which time conversion to oxide will be performed if no other uses have been determined. A plan for cleaning the empty cylinders and those containing more than 110 kg (50 lb) of enriched material has not yet been approved (this may be performed at K–25 or at one of the operating gaseous diffusion plants).

Currently, there are no onsite disposal facilities being operated at K–25. An ORR centralized waste management organization has been established at K–25 and assigned the responsibility of designing, constructing, and operating all new LLW disposal facilities for the ORR.

Mixed Low-Level Waste. Mixed LLW primarily consists of contaminated waste oils, solvents, sludges, soils, and acid wastes. Table E.2.5–18 presents the inventory of mixed LLW as of December, 1994, along with a 5-year projection. Sludges contaminated with low-level radioactivity were generated by settling and scrubbing operations and were stored in K-1407B and K-1407C ponds. Sludges have been removed from these ponds, and a portion has been fixed in concrete at the K-1419 sludge treatment facility and stored at the K-33 Building. These materials are considered mixed LLW and will be shipped offsite for disposal at a permitted commercial facility.

Most of the treatment of mixed waste is at the TSCA incinerator and the central neutralization facility. The majority of waste treated at the TSCA incinerator cannot be treated by commercial incinerators because of radioactive contamination. All waste sent to this facility must be fully characterized and identified. DOE has an approved chain-of-custody system for all waste received from offsite. The K-1435 TSCA incinerator is capable of incinerating waste that is mixed or contains PCBs. In 1990, a limited amount of waste was incinerated as a part of the startup testing. The incinerator began full operations in early 1991 and met all regulatory requirements in processing 1,000 m^3 (1,310 yd^3) of mixed waste. Mixed TSCA waste is being generated in the ash residue at the TSCA incinerator. Compliance issues regarding the management of the mixed PCB and radioactive waste generated in the ash are being pursued with EPA by DOE.

Most of the radioactively contaminated wastewater treated at the central neutralization facility is generated at the TSCA incinerator from the wet scrubber blowdown. Treated effluents are discharged through a designated

release point. The contaminated sludges that precipitate in the sludge-thickener tank are stored in an approved above ground storage area at K–25.

RCRA mixed, radioactive land disposal restricted waste (including some nonradiological classified land disposal restricted waste) has been stored in some areas for longer than 1 year. These wastes are currently subject to the land disposal restriction that permits storage only for accumulation of sufficient quantities to facilitate proper treatment, recycling, or disposal. This waste is being stored because of the nationwide shortage of treatment and disposal facilities for this type of waste. Private-sector technology demonstrations are being conducted that involve uranium extractions from sludge.

Uranium-contaminated PCB wastes (that is, mixed wastes) are being stored in excess of the 1-year limit imposed by TSCA because of the lack of treatment and disposal capacities. DOE and EPA have signed an FFCA, effective February 20, 1992, to bring the facility into compliance with TSCA regulations for use, storage, and disposal of PCBs. It also addressed the approximately 10,000 pieces of nonradioactive PCB-containing dielectric equipment associated with the shutdown of diffusion plant operations.

In 1989, during routine inspections of the drums of stabilized K-1407 pond sludge at the K-1417 storage facility, it was discovered that many of the drums had begun to corrode. Free liquid (waste with a pH of 12) on top of the concrete in the drums was found to be causing the corrosion (OR DOE 1993a:9-16). An action plan has been implemented to decant and/or dewater the mixed waste contained in the drums. A total of 45,000 drums of stabilized material and 32,000 drums of raw sludge must be processed and moved to storage facilities that meet regulations governing mixed wastes. All containers will be transferred to and stored in new and existing facilities at the K-1065, K-31, and K-33 buildings.

Hazardous Waste. Hazardous wastes generated at K–25 include PCB articles and items, waste oils and items, and uncontaminated asbestos waste. All hazardous wastes are managed according to applicable State and Federal regulations and DOE Orders. Several waste management facilities are already in place. Changing laws and regulations have made it necessary to upgrade several facilities and to design and construct new facilities that reflect the most recent environmental technology. The Central Neutralization Facility and the TSCA incinerator are the two major facilities that treat hazardous waste.

The Central Neutralization Facility provides pH adjustment and chemical precipitation for several aqueous streams throughout K–25. The main purpose of the facility is to treat wastewater to ensure compliance with the requirements of NPDES discharge limits on pH, heavy metal concentrations, and suspended solids. The treatment system consists of two 94,600-l (25,000-gal) reaction tanks and a 227,000-l (60,000-gal) sludge-thickener tank. Acidic wastes are neutralized with a hydrated-lime slurry, and basic wastes are neutralized with sulfuric or hydrochloric acid. The hydrated-lime bin and acid tanks are located at the facility. The treatment facility is physically divided into separate sections for treating hazardous and nonhazardous waste streams.

The TSCA Incinerator consists of storage tanks, dikes, and the incinerator. The incinerator system consists of a liquid, solid, and sludge feed system; a rotary kiln incinerator; and a secondary combustion chamber. The wastes treated at this facility include oils, solvents, chemicals, sludges, and aqueous waste.

As of June 30, 1995 approximately 76 m^3 (100 yd^3) of hazardous waste was stored at K-25 (OR LMES 1996a:6-6). In general, most of the waste stored at K–25 is designated as hazardous waste that has been contaminated with PCBs. Recyclable materials, such as mercury and silver-bearing photographic wastes, are stored before recycling, while other hazardous wastes are stored until sufficient quantity is accumulated for an offsite shipment. All offsite disposals of hazardous wastes, were halted in 1991 until procedures addressing a DOE performance objective of "No Rad Added" were developed by the sites and approved by DOE. Incineration is the preferred method for offsite treatment or disposal of wastes, particularly PCB wastes; however, landfills and other types of disposal are used as needed. On the K–25 site all hazardous waste is treated as mixed LLW.

Nonhazardous Waste. Computer paper is being recycled from the K–25 computer technology center. The paper recycling program is being reviewed for expansion into nonradiological areas. Product substitutions at the paint shop and photography lab have resulted in a decrease of waste generation. No percentage of reduction has been calculated due to the lack of baseline data.

Waste assay monitors have been purchased and are being used to screen solid, potentially radioactive waste to determine the potential to manage it as nonhazardous waste. The K-770 clean scrap yard provides storage for nonradioactive scrap metal. The scrap metal is stockpiled before being sold to the public. The solid nonhazardous waste from K–25 is sent to Y–12 Industrial Landfill V. Some materials, such as furniture, file cabinets, and paper, are disposed of through property sales.

The only nonhazardous treatment facility at K–25 is the sanitary waste treatment plant (Building K-1203). The system consists of an extended aeration treatment plant with a rate capacity of approximately 2,270,000 l/day (600,000 gal/day). The current demand is about 1,140,000 l/day (300,000 gal/day) (OR LMES 1996a:8-5). The sanitary sludge is disposed of in the Y–12 landfill. The Central Neutralization Facility does treat some nonhazardous liquid waste streams.